

IN THE SPECIFICATION:

At page 1, prior to line 1, please insert a new heading and text as follows:

--CROSS-REFERENCE TO RELATED APPLICATION

Priority is claimed under 35 U.S.C. § 119 from Japanese application 2002-311531 filed October 25, 2002.--

At page 1, prior to line 1, please insert a new heading as follows:

--1. Technical Field--

At page 1, prior to line 6, please insert a new heading as follows:

--2. Discussion of Related Art--

The paragraph beginning at page 1, line 6 and ending at page 2, line 8 has been amended as follows:

--In recent years, as a cheaper method of manufacturing a display such as a liquid crystal display, COG (Chip On Glass) method for directly mounting a driving circuit on an insulating substrate is employed more and more. The COG method is a method of directly mounting a driving circuit on which Au bumps are formed onto terminals formed around an insulating substrate by using an anisotropic conductive film. In the case of thermo-compression bonding the driving circuit to the insulating substrate by using the method, since the size of a thermo-compression bonding tool is usually about the same as that of the driving circuit, the driving circuit thermally expands. However, the portion of the insulating substrate just below the driving circuit is to thermally expand whereas the other portion is held in a state at almost normal temperature, so that the insulating substrate just below the driving circuit cannot expand. Consequently, the driving circuit and a terminal on the

insulating substrate are bonded to each other in such a state anisotropic conductive film and cured. When the temperature of the portion decreases to the normal temperature, distortion remains in both the driving circuit and the insulating substrate, so that the driving circuit and the insulating substrate are warped. In such a state, there ~~is occurred~~ occurs a problem that the refractive index in the insulating substrate locally changes due to a stress of the warp and a luminance nonuniformity occurs in a display. The luminance nonuniformity occurs conspicuously particularly in a region where an interval with the driving circuit ~~is being~~ narrow, for example, near the region in which the driving circuit connected to a signal line over which a video signal is supplied to a pixel in a display region is mounted.--

The paragraph beginning at page 2, line 9 has been amended as follows:

--To solve the problem, in the case of a conventional display in which the driving circuit is directly mounted on the insulating substrate, in a peripheral portion of a display panel, a lead electrode from an internal electrode of a liquid crystal display panel is exposed to one of the substrates, a semiconductor device is mounted on the substrate by an anisotropic conductive adhesive, and the thickness  $d_1$  of the mounted semiconductor device ~~mounted~~ is set to satisfy the relation of (thickness  $d_1$  of the semiconductor device)/(thickness  $D$  of the substrate on which the semiconductor device is mounted)  $1/2$ , thereby controlling a warp of the liquid crystal display panel (refer to, for example, Japanese Unexamined Patent Publication No. 338515/2000 (Table 1)).--

The paragraph beginning at page 2, line 25 and ending at page 3, line 11 has been amended as follows:

--In the conventional technique of Japanese Unexamined

Patent Publication No. 338515/2000, there is proposed a method of setting the thickness of the driving circuit to ~~the~~ half of the insulating substrate or less, thereby suppressing the warp amount of the insulating substrate to 5  $\mu\text{m}$  or less. However, when the warp amount of 5  $\mu\text{m}$  exists, although luminance nonuniformity is lessened, there ~~is occurred~~ occurs a problem that luminance nonuniformity is easily visually recognized, for example, when black is displayed ~~in~~ on the whole screen. Further, in the conventional technique of Japanese Unexamined Patent Publication No. 51618/2001, a warp which occurs between neighboring semiconductor devices can be suppressed, but a warp in a portion in which the driving circuit is mounted is not suppressed. As a result, luminance nonuniformity occurs, and a problem of poor display also arises.

The paragraph beginning at page 8, line 4 and ending at page 9, line 3 has been amended as follows:

--A method of connecting a terminal on the insulating substrate to the driving circuit will now be described. First, the surface of the terminal on the insulating substrate is cleaned with a limited-dusting wiping member dipped in ethanol or the like to remove conductive foreign matters. After that, the anisotropic conductive film 5 is transferred onto the terminal on the insulating substrate. The anisotropic conductive film is obtained by dispersing conductive particles formed by Ni/Au plating the surface of a plastic particle of 3 to 5  $\mu\text{m}$  into an insulating resin which is mainly composed of an epoxy resin. In the driving circuit 3, an Au bump having a height of approximately 15  $\mu\text{m}$  is formed by plating in a connection terminal portion for input/output. The connection terminal portion for input/output of the driving circuit 3 and the terminal on the liquid crystal display are aligned with high precision and are temporarily bonded by using a thermo-compression. After that, by

using a thermo compression bonding tool, the anisotropic conductive film 5 is heated and pressurized under conditions of 150 to 190°C, 10 to 15 seconds, and 30 to 100 MPa. Since the thickness of the driving circuit varies, ~~it is general to use a~~ compression bonding tool of a type independent for each driving circuit is generally used. By performing the thermo compression bonding under the above conditions, the conductive particles in the anisotropic conductive film existing on the terminal on the insulating substrate are pressed and flattened by the Au bumps of the driving circuit and are made conductive in the vertical direction. However, in the direction parallel to the insulating substrate, due to existence of the insulating epoxy resin around each of the conductive particles, insulation is maintained.